

magnoplast

INSTRUCTION

ULTRA dB



INDOOR LOW-NOISE SEWAGE SYSTEM

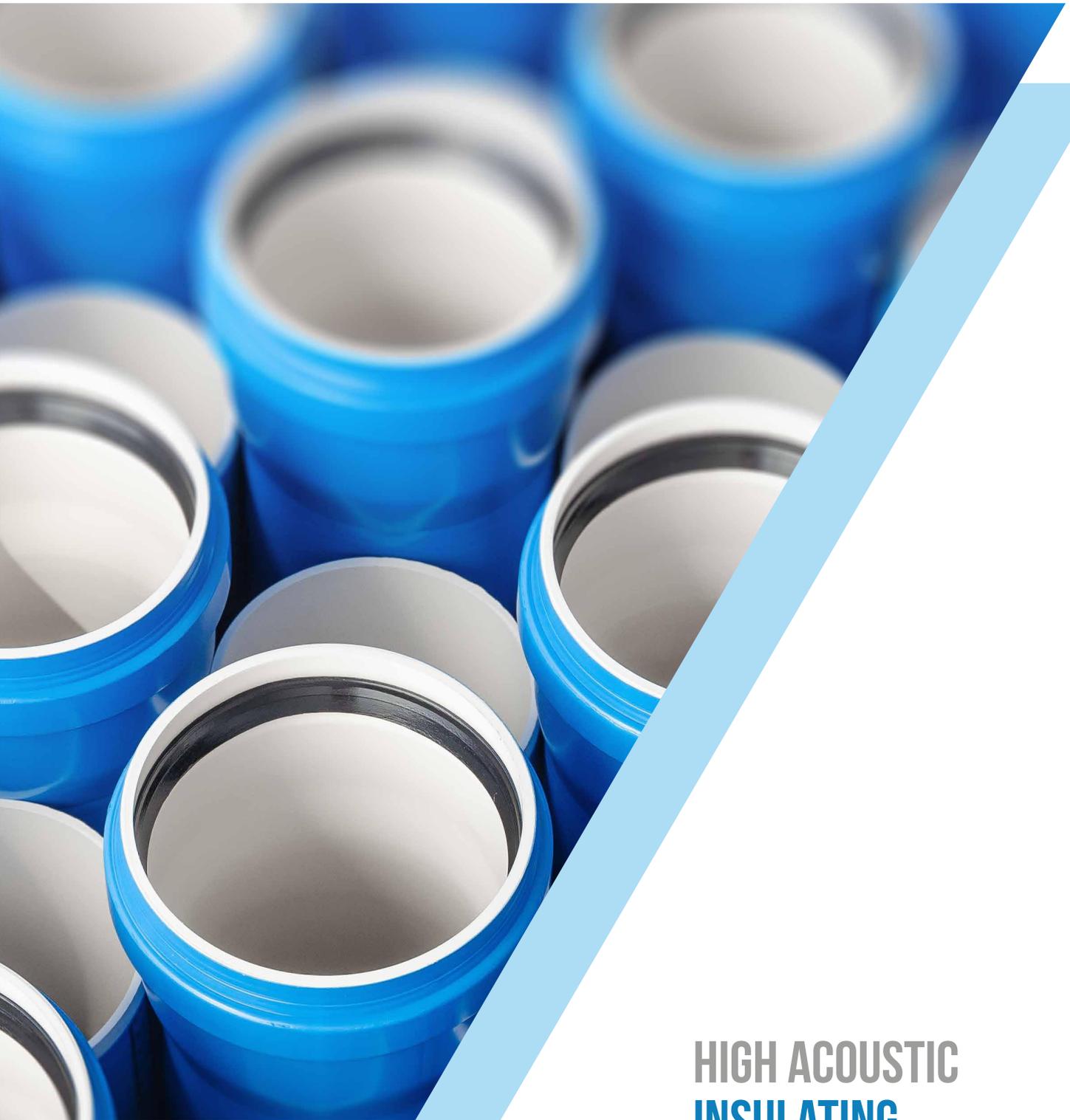
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ULTRA dB



**HIGH ACOUSTIC
INSULATING
CAPACITY**

ULTRA DB SYSTEM

The Ultra dB low-noise indoor sewerage system is a complete system of pipes and fittings made of mineral-enhanced polypropylene, compliant with requirements specified in the Technical Approval no. AT-15-9406/2014. Each pipe has a double-layered structure which consists of the internal (white) and external (blue) walls, smooth, resistant to dirt and permanently overprinted with a centimetre scale. Inspection is easy, as the internal surface is smooth and white.

The pipes are manufactured in the co-extrusion process, which method allows for the creation of a molecularly bound solid layer. The fittings are manufactured by injection. Given the content of polypropylene and the wall structure specially designed for this system, all requirements imposed on modern sewage systems are met, namely: **safety, damage resistance and long-lasting durability!**



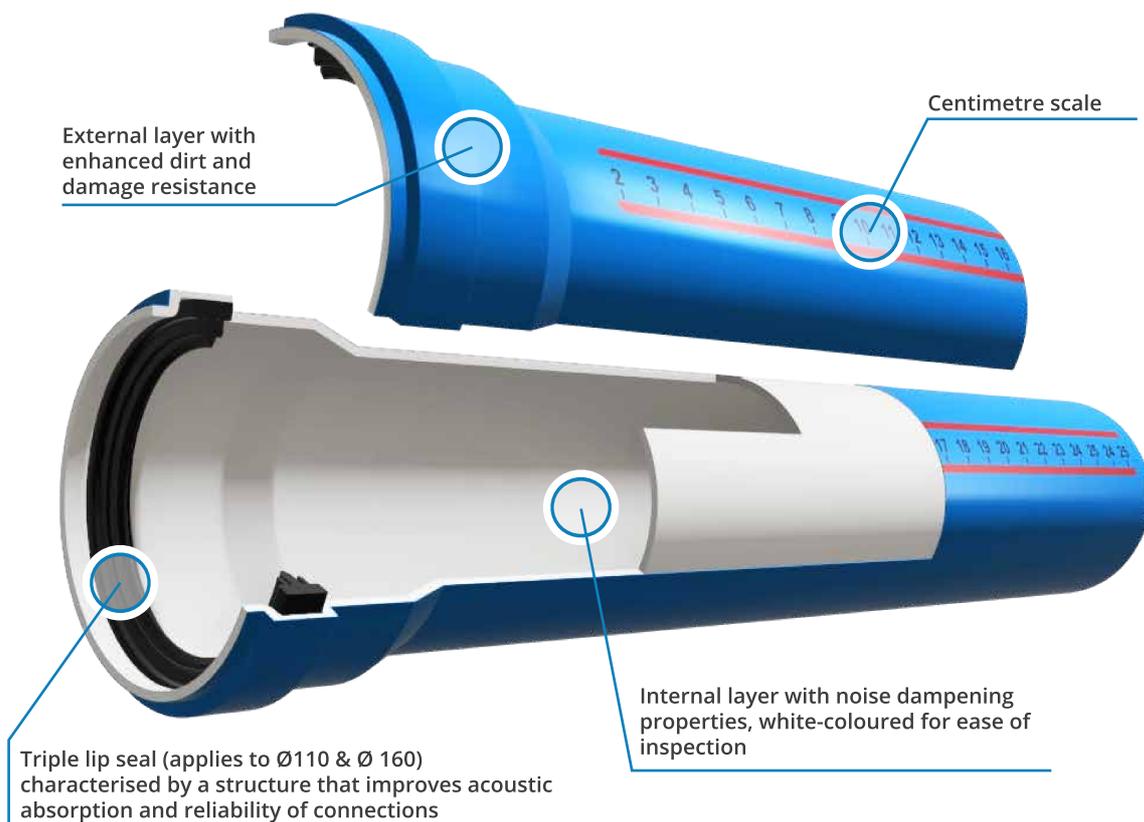
Superior characteristics of the materials used to manufacture the system: high resistance to impact, chemical compounds and hot temperature as well as excellent tightness, small weight and easy installation make mineral-enhanced PP products sought-after on the market while their share, in comparison with traditional solutions based on PP or PVC-U, is on the increase by the day.

The Ultra dB system versions are available with the diameters of 50, 75, 110 and 160 mm. The combination of the material composition and wall thickness ensures a very high degree of sound insulation, since the noise level is as low as 16 dB. Lip seals made of a rubber-based compound are used to connect the system components with one another.

As the pipes are lightweight, their installation is effortless. Thanks to the smooth inner surface of each pipe, waste water encounters little resistance as it is drained, which even if the conduit slope is extremely slight prevents deposits from forming; consistently, no sewage putrefaction occurs in the pipes, which thus remain unclogged.

BENEFITS OF THE SYSTEM

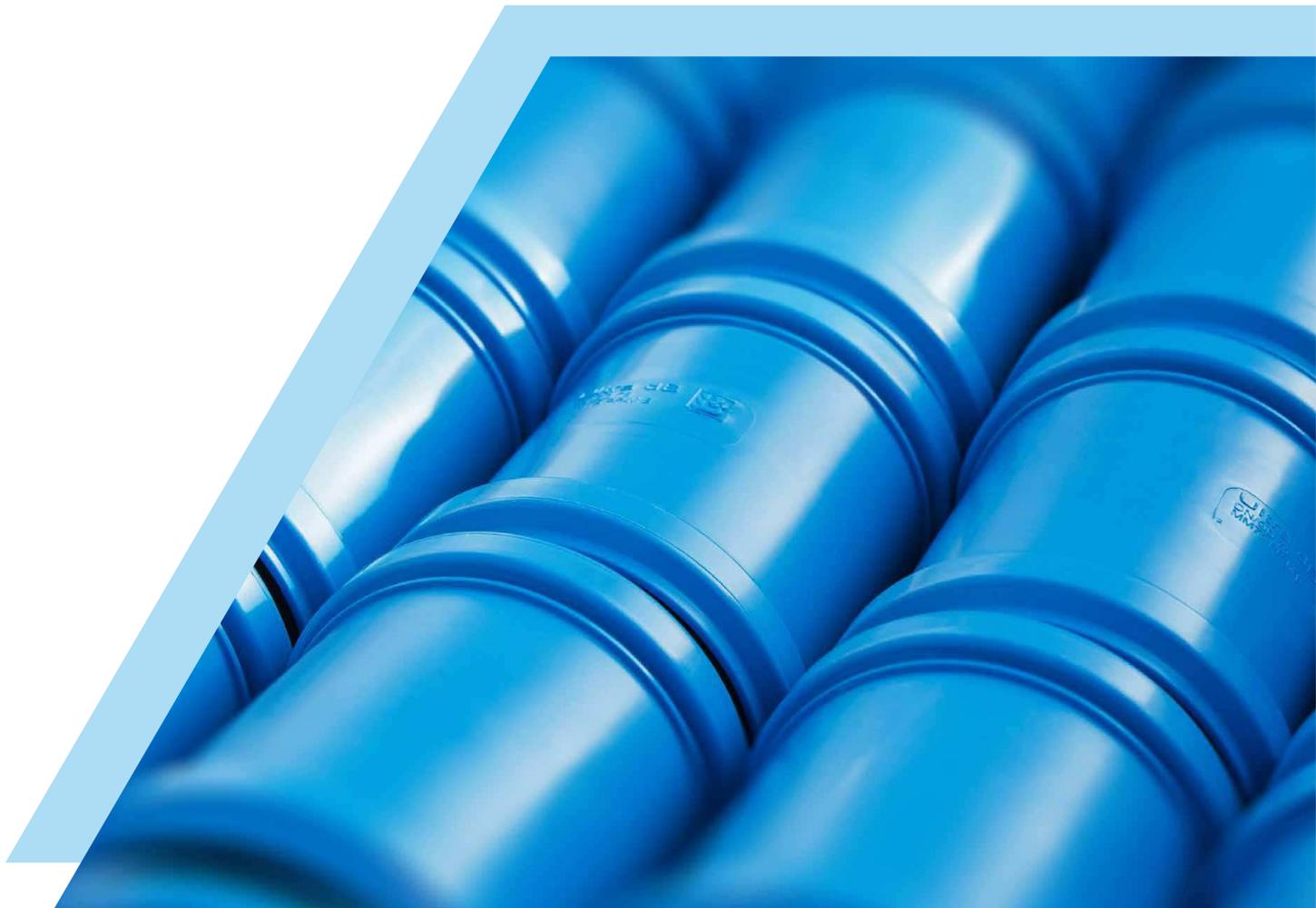
- high degree of sound insulation due to the double-layered structure of the mineral-enhanced PP pipe wall, noise level as low as 16 dB, proved positive by the tests in the Fraunhofer Institute, Stuttgart, acc. to DIN 4109-10, 3rd class of sound insulation for civil structures intended for people to stay in permanently,
- resistance to aggressive sewage within the range from 2 to 12 pH,
- high thermal resistance to the sewage temperature as high as 90°C when the flow is permanent and up to 95°C when the flow is short-term,
- high mechanical resistance at temperatures as low as -10°C, which enables the installation in winter conditions,
- very high resistance of the pipes to compression and impact as well as the option of mounting indoors and in the soil, under a structure or in the concrete, thanks to minimum ring stiffness of 8 kN/m² in 110 and 160 mm sizes (BD application scope),
- Tightness of socket joining up to 4.5 bar (45 meter of water column) – applicable for roof drainage systems
- effortless and efficient system installation thanks to the innovative overprinting of the pipes with the centimetre scale; option of cutting the pipes into sections of any length, straightforward methods for connecting them without any special tools, thanks to factory-installed lip sealing and rich assortment of fittings,
- superior effluent flow hydraulics thanks to the perfectly smooth inner surface of each pipe, preventing deposits from forming,
- 100% recovery of raw materials used for production thanks to the recyclability of the pipes and fittings included in the Ultra dB system



APPLICATION

The Ultra dB low-noise indoor sewage system is intended for the construction of non-pressure low-noise sanitary, storm water and process waste water systems. It is used for draining highly aggressive domestic, municipal and industrial types of sewage (2–12 pH), including ones characterised by a high concentration of hydrogen sulphide and, further, a high temperature.

Due to its benefits, the Ultra dB system has a wide range of applications, for instance in single- and multi-family residential housing; it is also used in systems installed in: luxury apartment buildings, nursing homes, offices, doctors' surgeries, hotels, restaurants, hospitals, operating rooms, spas, laboratories, dentists' surgeries, schools, lecture halls at tertiary education institutions, reading rooms, radio and TV studios, concert and conference halls, theatres, shop floors and in order to drain effluent generated by – including but not limited to – the pharmaceutical, food and catering industries (heating the pipes to 70°C is recommended while draining fat-laden effluent).



NOISE PROTECTION

Given today's development of the construction market, noise emitted by systems affects the acoustics of civil structures to a large extent. Users are raising their expectations, and requirements for noise reduction in buildings will doubtless become more stringent. Specific issues related to building acoustics, including permissible indoor levels of noise emitted by technical equipment installed in buildings, are provided for in PN-B-02151-02:1987. The fulfilment of the obligation to ensure building acoustic protection, while using the Ultra dB system – introduced by the Regulation of the Minister of Infrastructure of 12 April 2002 on technical conditions to be fulfilled by buildings and their locations, according to the guidelines contained in the EC Directive 89/106/EEC and the document containing the interpretation of this directive, is confirmed by the results of the acoustics expert appraisal performed by the Fraunhofer Institute, where the weighed material sound level index is $L_{SC,A} \text{ dB(A)} = 16 \text{ dB}$.

The noise measurement for the low-noise system made of the Ultra dB pipes was performed according to the methodology developed by the scientists from the IBP Fraunhofer Institute, Stuttgart, and specified in EN 14366. Pursuant to EN 14366, the test applies to the vertical system in a three-storey building, located at the wall with a basis weight of 220 kg/m². On each storey is a tee-branch, plugged on two storeys. The vertical section downstream the lowest storey continues further as a horizontal section with two 45° elbows and compensatory section. The floor grommets are tightly sealed. Water, a test medium, is injected into the measuring system on the highest storey, and collected from the horizontal section on the lowest level. Noise is measured on the lowest storey at the following flow rates: 0.5; 1.0; 2.0 and 4.0 l/s.

The most disadvantageous boundary conditions:

- most common maximum flow rate: 4.0 l/s,
- diameter of the most common DN 110 mm,
- measuring location: lowest room behind the wall to which the riser pipe is fixed.

Measured value	Ultra dB system 110 x 3.4 with „BISMAT 1000” clamps			
	0.5	1.0	2.0	4.0
Flow rate, l/s	0.5	1.0	2.0	4.0
Weighed material sound level index $L_{sc,A}$, dB(A) ^{1/}	<10	<10	13	16

^{1/} determined per PN-EN 14366:2006 in the “low ground floor room behind configuration”

Fig. 1 - Acoustic characteristics

The tests show that the Ultra dB system displays a very high degree of sound insulation and emits as little noise as 16 dB – Fig. 1. Knowing that the human nervous system begins to experience fatigue at the minimum noise level of 30 dB, those 16 dB, made by the air and solids transported through the Ultra dB system, are hardly a nuisance with this very quiet system. In fact, the noise level is as low as that of a ticking watch. Furthermore, the system complies with strict recommendations contained in DIN 4109 and highly stringent recommendations of VDI 4100 (20 dB at the most for semi-detached and terraced houses).

The Ultra dB system is a universal solution and as such it ought to be applied in each type of construction, residential housing, hotels, schools and industry, since it guarantees silence, comfort and long-lasting durability. Figure 2 shows average noise levels in our environment.

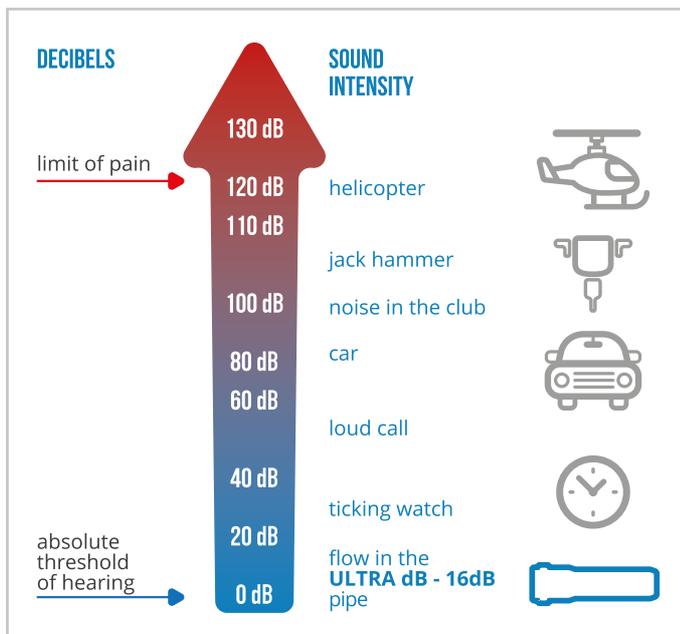


Fig. 2

Examples of noise sources

Bearing in mind maximum use of Ultra dB system benefits, high sound insulation, it is recommended to install sewage system following the principles presented below:

- pipelines have to be laid next to the external walls or next to the walls with basis weight $\geq 220 \text{ kg/m}^2$,
- any culverts through the walls and floors have to be made with the application of materials suppressing noise e.g. polyurethane foam,
- apply fixing elements (clamping rings) equipped with rubber inserts,
- avoid mounting system next to the walls requiring sound suppressing insulation,

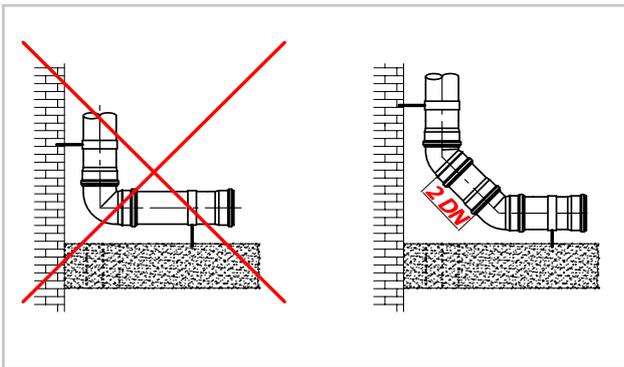


Fig. 3 Change of riser pipe direction

- the transition of riser pipe to horizontal section or changing direction shall be made using 2 bends, maximum 45° , and between them apply stabilization section with the length of $2 \times \text{DN}$ (with the riser pipe heights exceeding 10 m it's necessary) - Fig. 3,
- assembly of pipe installation using special clamping rings BISMAT 1000 perform taking into account proper distances - Fig. 4.; clamping rings BISMAT 1000 install as fixed points at min. every second floor; installation of other fixed points and sliding points can be performed using standard clamps with rubber insert

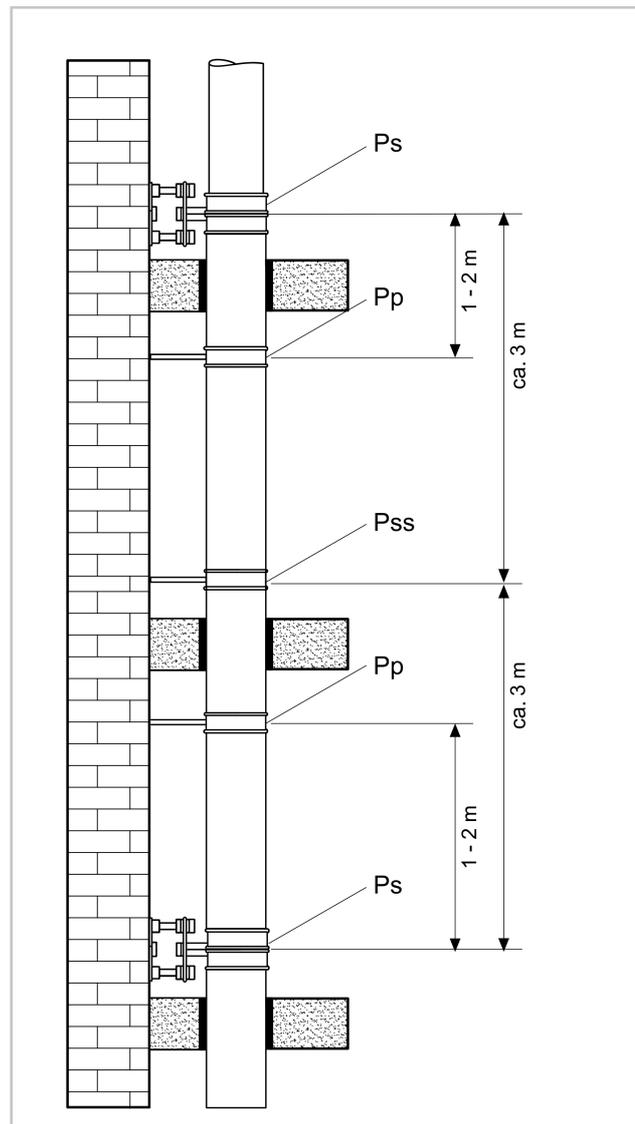


Fig. 4 Fixing of riser pipes

Ps - fixed point – clamping rings BISMAT 1000.

Pp - sliding point – standard clamping ring with rubber insert.

Pss - fixed point – standard clamping ring with rubber insert.

STORAGE

Depending on their lengths, the Ultra dB pipes are packed in bundles and palletised or packaged in cardboard boxes. Pallets are stored on a flat horizontal plane kept clear of stones and sharp objects, in original factory packaging, if possible. To secure the pipes against deformation, lay them flat alongside the entire length. Further, lay them in alternating layers for their bells to rest freely. The Ultra dB system pipes and fittings can be stored outdoors. The tests indicate that even several years of exposure to UV radiation does not have any adverse impact on the characteristics and durability of the pipes; even though, their protection against discolouration is recommended for aesthetic reasons.

All pipes are marked with the following information:

- system name,
- diameter,
- material,
- product identification (symbol, angle, length),
- year of production,
- barcode,
- centimetre scale.

Pipe diameter (mm)	Pipe length (mm)	Number of pcs. on a pallet
50	250	480
50	500	320
50	1000	200
50	2000	200
50	3000	200
75	250	320
75	500	160
75	1000	120
75	2000	120
75	3000	120
110	250	120
110	500	60
110	1000	60
110	2000	60
110	3000	60
160	500	35
160	1000	35
160	2000	35
160	3000	35

INSTALLATION OF THE SYSTEM

To connect the Ultra dB system pipes, sockets and fittings are used with factory lip sealing made of a rubber-based compound. Inside the socket is a uniquely shaped lip seal, which makes the withdrawal of the spigot end smoother.

For the connection to be effective, clean the dirt off the pipe ends, fittings and sealing; lubricate the pipe ends with a lubricant, check the position of the elastomer seal, insert the pipe into the socket until it stops; while connecting the pipe to the fitting, withdraw the pipe from the socket by 10 mm; while connecting the pipe to another (Fig. 5), install the Ultra dB sewage pipes without causing tension and to allow for the compensation of thermal expansion, assuming that one sealed socket end compensates by 1.0 cm; to maintain the expansion gap, anchor the assembled riser pipes with clamps and holders.

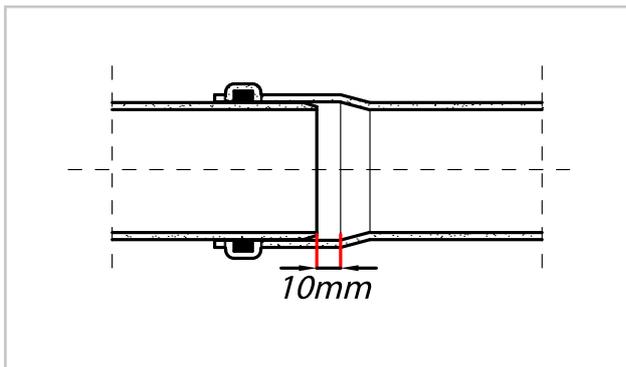


Fig. 5 Withdrawal of the pipe from the socket

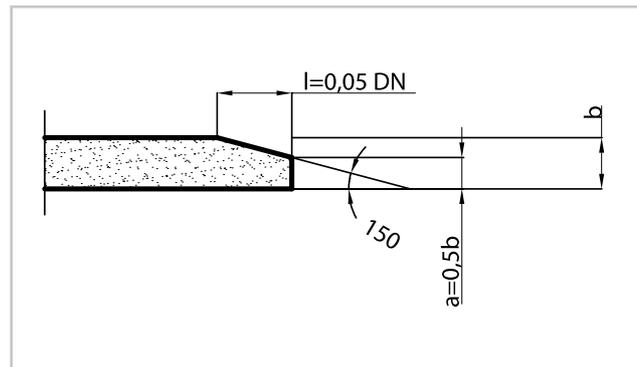


Fig. 6 Chamfering

Lay the pipes with their sockets in the opposite direction to the sewage flow. By using suitable fittings, the Ultra dB system can easily be connected to the plain-end pipes of the KG outdoor sewage system, and to the SC system of manholes, offered by MAGNAPLAST.

As a rule, riser pipes are attached to the wall structure, under the socket. The Ultra dB socket-connected riser should have two anchoring points on each storey.

To mount the pipes, follow these guidelines:

- fixed points: clamps with rubber damping pads commonly available on the market – under the socket;
- sliding points: clamps with rubber damping pads – half the height of the storey.

The Ultra dB pipes and fittings can be mounted directly in the concrete or in the masonry wall. Seal the sleeve with tape lest any concrete mortar penetrate into it. Install the system components in such a manner as to prevent pipeline displacement while concreting.

Seal the floor grommets tightly and ensure adequate sound insulation. When pouring mastic asphalt onto the floor, secure the system components passing through the floor grommets with protective tubes or by wrapping them in thermal insulation material.

You can extend the existing system by mounting a branch with sliding sleeves. At the site of the extension, cut out a long enough straight pipe section ($L = \text{fitting length} + 2.5 \text{ DN}$) and install the branch. Clean and smooth the contact point. Slide one sleeve onto the remaining section of the spigot pipe and the other sleeve onto the piece of the pipe corresponding with the gap length. Then install this piece of the pipe in the system and move the sleeves past the cut edges.

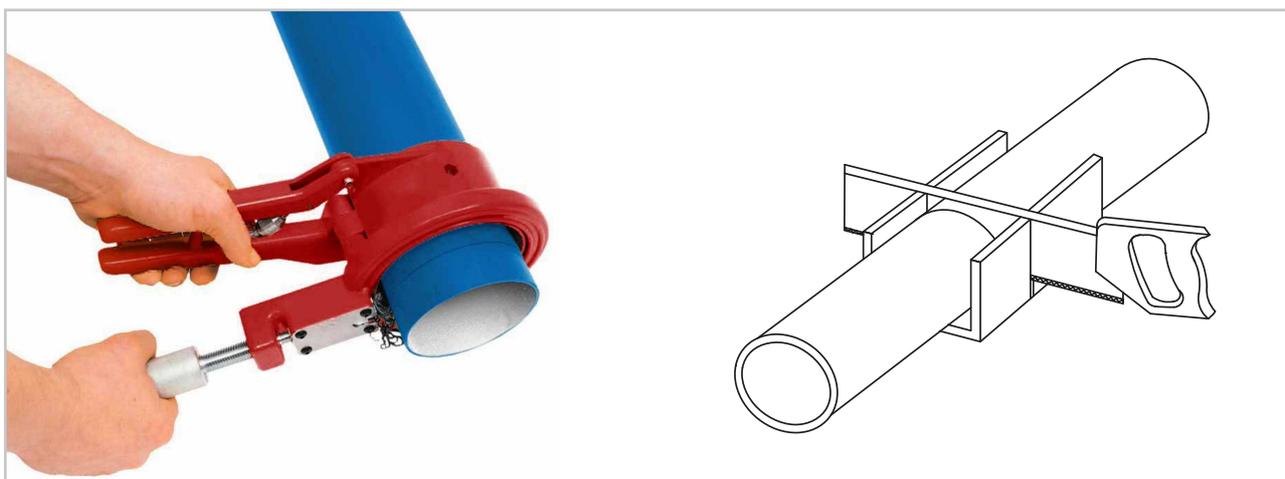


Fig. 7 Pipe cutting

Cut the pipes to the proper size with a suitable knife for plastics; alternatively, use a manual or mechanical fine tooth saw. Cut perpendicularly to the pipe axis. Mitre boxes or a sheet of paper to wrap the pipes with may come in handy. Remove all burrs to have appeared due to cutting. Chamfer the pipe end with a cutting tool or a coarse file at an approx. angle of 15°. (Fig. 6).

INSTALLATION OF THE SYSTEM IN THE SOIL

To tap the full potential of the Ultra dB system pipes by further installing them in the soil, you must ensure proper conditions for their laying, backfilling, soil compaction and meeting the requirements contained in PN-EN 1046:2007.

The bedding layer characteristics depend on the soil type:

- 10 cm bedding layer with the grain size of up to Ø22 mm, for pipes up to DN 200 in the dry soil,
- 15 cm with the same grain size as above in the saturated soil – perform earthworks in a drained excavation,
- 25 cm in rocky soils or with the grain size exceeding Ø40 mm.

The bedding layer is formed with loose soil, a single or multi-fraction material, coarse-grained sand with a small content of fine particles, sandy gravel or crushed aggregate characterised by the grain size from 2 to 40 mm. Ensure that the bedding layer is compacted well (at least 85% of Proctor's value – green area).

ULTRA DB – FIRE PROTECTION

The proper, practical and cost-effective solution to protect the system is to use fire protection collars. The new generation collars are small and have been developed to secure grommets of plastic pipelines passing through walls and floors (Fig. 8).

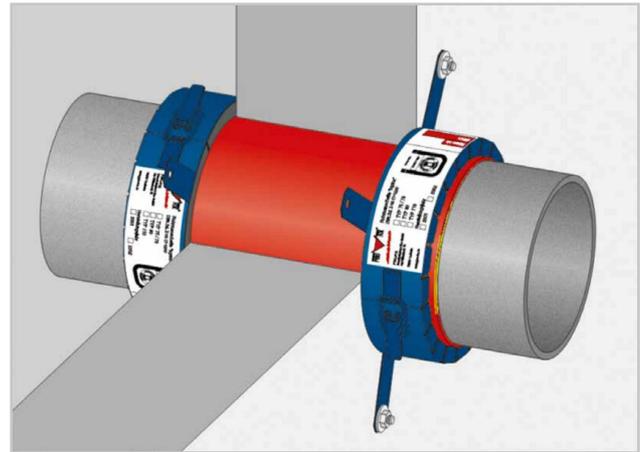


Fig. 8 a) Ceiling culvert

b) Wall culvert

Bolt them to the wall or floor. The clamp allows the assembly having installed the pipes. As for wall grommets, use two fire protection collars. In the case of the installation in light walls, use threaded bolts and turn the collars by 45° in relation to each other.

CERTIFICATES

The Ultra dB system has been approved for market trading on the grounds of the following standards and approvals:

- Technical Approval by ITB no. AT-15-9406/2014,
- PN-EN 14758-1,
- PN-EN 1451-1:2001,
- Hygienic Conformity Certificate issued by the National Institute of Public Health.



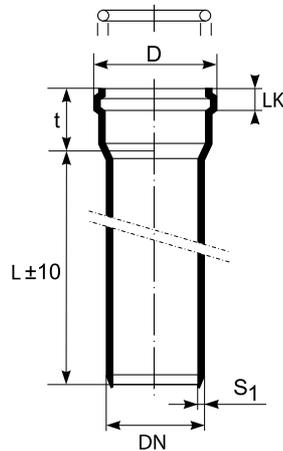
QUALITY GUARANTEE FOR THE ULTRA DB SYSTEM

- Reputable suppliers of raw materials
- Superior quality seals
- Continuous raw material and manufacturing control
- Own laboratory

**PRODUCT
CATALOGUE**

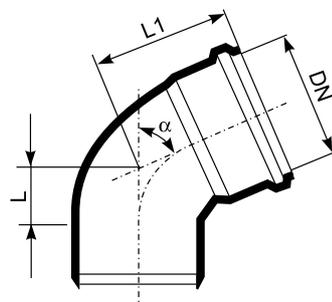
ULTRA dB

SOCKET PIPES (UDBEM)



DN [mm]	s1 [mm]	D [mm]	t [mm]	L [mm]	LK [mm]	Art. no
50	2,0	64	56	250	19	146010
50	2,0	64	56	500	19	146020
50	2,0	64	56	1000	19	146040
50	2,0	64	56	2000	19	146060
50	2,0	64	56	3000	19	146065
75	2,3	89	61	250	22	146110
75	2,3	89	61	500	22	146120
75	2,3	89	61	1000	22	146140
75	2,3	89	61	2000	22	146160
75	2,3	89	61	3000	22	146165
110	3,4	128	72	250	25	146210
110	3,4	128	72	500	25	146220
110	3,4	128	72	1000	25	146240
110	3,4	128	72	2000	25	146260
110	3,4	128	72	3000	25	146265
160	4,9	187	95	500	33	146270
160	4,9	187	95	1000	33	146280
160	4,9	187	95	2000	33	146290
160	4,9	187	95	3000	33	146295

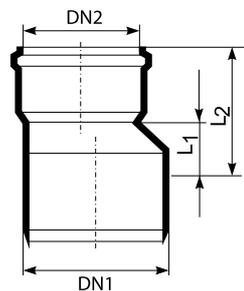
BENDS (UDBB)



DN [mm]	angle α	L [mm]	L1 [mm]	Art. no
50	15°	10	70	146300
50	30°	9	68	146310
50	45°	17	87	146320
50	67°	28	77	146325
50	87°	28	84	146330
75	15°	23	91	146340
75	30°	11	80	146350
75	45°	18	92	146360
75	67°	29	86	146365
75	87°	42	94	146370
110	15°	24	101	146420
110	30°	18	100	146430
110	45°	36	115	146440
110	67°	39	122	146445
110	87°	59	131	146450
160	45°	50	131	146453
160	87°	95	162	146457

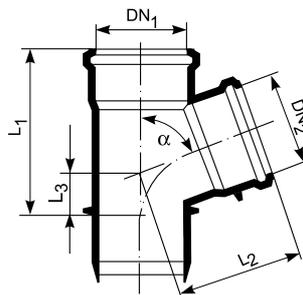
REDUCERS (UDBR)

DN1/DN2 [mm]	L1 [mm]	L2 [mm]	Art. no.
75/50	19	73	146600
110/50	37	93	146610
110/75	22	87	146620
160/110	34	135	146625



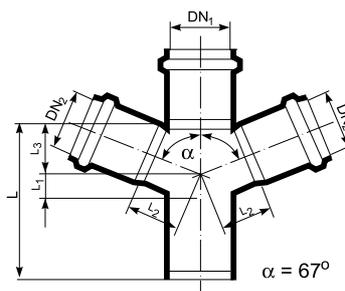
BRANCHES (UDBEA)

DN1/DN2 [mm]	angle α	L1 [mm]	L2 [mm]	L3 [mm]	Art. no.
50/50	45°	133	116	12	146560
75/50	45°	147	145	1	146540
75/75	45°	183	159	18	146520
110/50	45°	140	158	17	146500
110/75	45°	188	186	1	146480
110/110	45°	224	195	25	146460
160/110	45°	275	263	1	146485
160/160	45°	330	294	36	146465
110/50	67°	167	129	8	146585
110/75	67°	169	144	22	146590
110/110	67°	190	160	40	146595
50/50	87°	117	91	28	146570
75/50	87°	119	99	27	146550
75/75	87°	158	115	40	146530
110/50	87°	122	125	28	146510
110/75	87°	166	126	40	146490
110/110	87°	182	133	57	146470
160/160	87°	344	243	83	146475

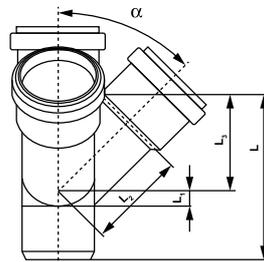


DOUBLE BRANCH (UDBDA)

DN1/DN2 [mm]	angle α	L1 [mm]	L2 [mm]	L3 [mm]	L [mm]	Art. no.
110/110	67°	40	85	85	201	146900

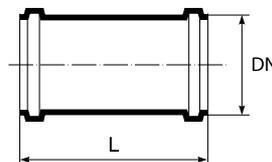


CORNER DOUBLE BRANCH (UBDED)



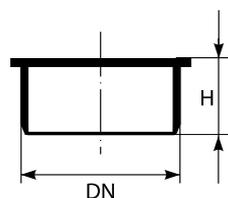
DN1/DN2 [mm]	an- gle α	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L [mm]	Art. no.
110/110	67°	40	86	86	86	202	146920

SLIDING MUFFS (UDBU)



DN [mm]	L [mm]	Art. no.
50	103	146650
75	109	146660
110	136	146670
160	185	146675

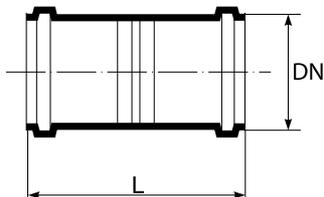
PLUGS (UDBM)



DN [mm]	H [mm]	Art. no.
50	39	146710
75	39	146720
110	46	146730

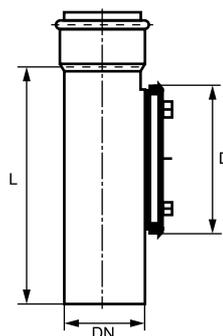
DOUBLE SOCKETS (UDBMM)

DN [mm]	L [mm]	Art. no.
50	112	146680
75	118	146690
110	136	146700



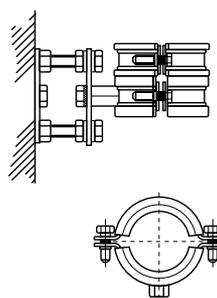
ACCESS PIPE (UDBRE)

DN [mm]	D [mm]	L [mm]	Art. no.
110	230	308	146750
160	280	380	146755



BISMAT 1000 CLAMP

DN [mm]	Art. no.
110	17322



HIGH MECHANICAL RESISTANCE





SOLUTIONS FOR YEARS

magnoplast



HTPLUS INDOOR SEWAGE SYSTEM



ULTRA dB LOW-NOISE INDOOR SEWAGE SYSTEM



SKOLAN-dB THICK-WALLED, LOW-NOISE SEWAGE SYSTEM



KG PVC OUTDOOR SEWERAGE SYSTEM



PP OUTDOOR SEWERAGE SYSTEM MAGNACOR



PP KG 2000 OUTDOOR SEWERAGE SYSTEM



SEWERAGE CHAMBERS SYSTEM



POLYETHYLENE (PE) PRESSURE PIPES



DRAINAGE (DR) SYSTEMS